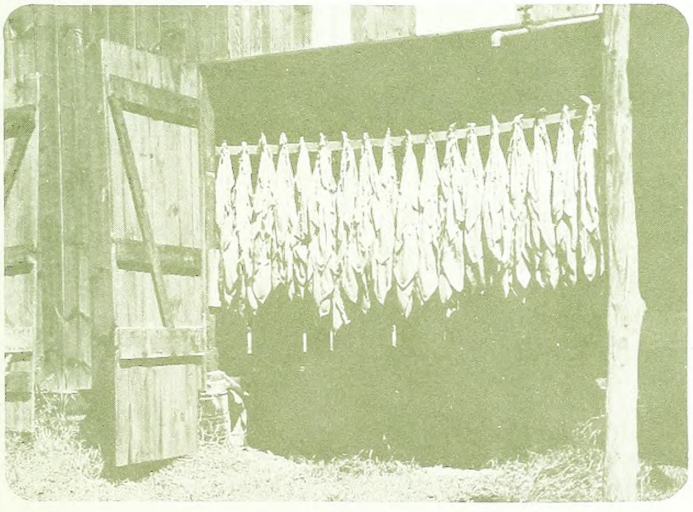
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

CHANGES IN CIGAR LEAF TOBACCO ACREAGE



ECONOMIC RESEARCH SERVICE • U.S. DEPARTMENT OF AGRICULTURE • ERS 539

ABSTRACT

Cigar tobacco—filler, binder, and wrapper—was produced in seven States in 1971 and accounted for 3.9 percent of total U.S. tobacco production. General economic trends, rising imports, and industrial developments brought a two-thirds decline in cigar tobacco acreage during 1950-71, thus reducing acreage to 37,000. In six of the seven producing States, farm employment declined. Farm wage rates more than doubled, but tobacco prices did not keep pace. Regression analysis for 1957-71 explained 98 percent of the year-to-year variations in filler and binder acreage and 91 percent in wrapper. Farm tobacco prices and trend were the major factors associated with acreage variations. Further acreage decline is likely in the future.

Keywords: Cigar tobacco, Acreage, Economic trends, and Regression analysis.

Washington, D. C. 20250 December 1973

CONTENTS

	Page
Highlights	iii
Introduction	1
Production Trends	1
General Economic Trends	3
Analysis of Acreage Changes	7
Cigar Filler Acreage Changes	7
Cigar Binder Acreage Changes	7
Cigar Wrapper Acreage Changes	10
Acreage Prospects	13
Literature Cited	15

HIGHLIGHTS

General economic trends, rising imports, consumer preferences for smaller, thinner, filter-tipped cigars, and the increasing use of reconstituted sheet tobacco have led to a decline in cigar leaf tobacco acreage.

During 1950-71, acreage declined by about two-thirds, from 100,000 to 37,000 acres. This downward trend, which has been underway since the boom of cigar sales in the 1920's, is expected to continue.

Regression analyses of acreage changes during 1957-71 show that the farm tobacco price-wage ratio and trend explained most of the year-to-year changes. For the three cigar leaf types, the regression equations accounted for the following percentages of annual acreage variation: 98 percent for filler and binder and 91 percent for wrapper.

In each of the seven States producing cigar leaf tobacco, farm wages more than doubled from 1950 to 1971. Tobacco price rises, however, did not keep pace. Also, in six of the States, farm employment declined.

TABLES

Table		*Page*
1.	Harvested acreage of cigar tobacco (types 41-62) and percentage of allotted acreage, by State, 1951-71	4
2.	Cash receipts from cigar tobacco and share of cash receipts from marketings, by State, 1955-71	4
3.	Farm and nonfarm employment in selected States, 1950-71	5
4.	Nonfarm-to-farm wage ratio and index of farm and nonfarm wages in selected States, 1950-71	5
5.	Comparison of linear equation results for harvested cigar tobacco acreage, 1957-71	14

FIGURES

Figure		*Page*
1.	Cigar-Leaf Growing Districts of the United States	2
2.	Farm Wage Rates (Composite)	3
3.	Cigar Tobacco Prices by Type (Filler and Binder)	6
4.	Cigar Tobacco Prices by Type (Shade Grown)	6
5.	Pennsylvania Filler Tobacco Acreage and Price/Labor Ratio	8
6.	Ohio Filler Tobacco Acreage and Price/Labor Ratio	8
7.	Connecticut Valley Binder Tobacco Acreage and Price/Labor Ratio	9
8.	Wisconsin Binder Tobacco Acreage and Price/Labor Ratio	9
9.	Connecticut Valley Wrapper Tobacco Acreage and Price/Labor Ratio	10
10.	Georgia-Florida Wrapper Tobacco Acreage and Price/Labor Ratio	11
11.	Cigar Tobacco Yields by Type (Filler)	12
12.	Cigar Tobacco Yields by Type (Binder)	12
13.	Cigar Tobacco Yields by Type (Shade Grown)	13

CHANGES IN CIGAR LEAF TOBACCO ACREAGE

by

Johnny D. Braden, Agricultural Economist
Commodity Economics Division
Economic Research Service

INTRODUCTION

Production of cigar leaf tobacco in the United States began during the late 1600's in the Connecticut Valley and in sections of Pennsylvania—areas outside the southern tobacco plantation districts. But it took more than two centuries to produce a good quality cigar leaf tobacco and for it to become a sizable crop. In the early 1800's, the Connecticut Valley was the chief district for production of cigar tobacco and also the center of U.S. cigar production (*1*).[1]

As settlers moved west, they spread production to areas where cigar tobacco became a cash crop on general livestock and crop farms. Varieties and cultural practices were improved, and best adapted lands were planted. Eventually, three classes of U.S. cigar tobaccos were recognized—filler, binder, and wrapper—depending on their major use in cigars. Each type, however, has secondary uses.

Connecticut Valley production fell off in the late 1800's as preferences shifted to imports from Sumatra. However, around 1900, U.S. farmers erected cotton cloth tents for shade to achieve the desired leaf qualities for cigar wrappers, and soon, the Connecticut Valley became known as "Tobacco Valley".

Today, cigar tobacco production is reported in local areas of seven States—Connecticut, Massachusetts, Pennsylvania, Ohio, Wisconsin, Georgia, and Florida (fig. 1). At one time, production of cigar filler and binder was reported in New York, Indiana, Minnesota, Georgia, and Florida, but this output is now too minor to report by the U.S. Department of Agriculture in crop estimates (*6*).

[1]Italicized numbers in parentheses refer to items in Literature Cited at the end of this report.

PRODUCTION TRENDS

Cigar tobacco is grown in well-defined areas where the soil, climate, and cultural practices yield a product with qualities desired by manufacturers and exporters. In 1971, U.S. growers produced about 37,000 acres of cigar tobacco, or 4.4 percent of the total U.S. tobacco acreage. Farm value amounted to $68.5 million and provided income to about 15,000 farm families.

During the heyday of cigar sales in the 1920's, about 180,000 acres of cigar tobacco were produced, accounting for 9 percent of U.S. tobacco acreage. By the late 1940's, cigar acreage appeared to stabilize around 100,000 acres. However, during 1950-71, harvested acreage declined by almost two-thirds. Yields increased slightly, but production fell as acreage declined.

Production of cigar binder tobacco in the Connecticut Valley dropped rather sharply in the mid-1950's, following the introduction of reconstituted sheet tobacco for cigar binder.[2] By the late 1960's, use of reconstituted sheet tobacco as wrapper along with the trend toward smaller size cigars began to reduce production of shade-grown tobacco. In recent years, filler tobacco has also lagged because of competition from relatively low-priced imports.

In 1951, growers first approved Federal marketing quotas (acreage allotments) for filler and binder tobaccos grown principally in Ohio, Wisconsin, Connecticut, and Massachusetts (types 42-44 and 51-55). Since then, however, growers have increasingly

[2]Reconstituted sheet tobacco is manufactured by grinding tobacco into a fine powder, mixing with a cohesive agent, and rolling into a flat sheet of uniform thickness and quality.

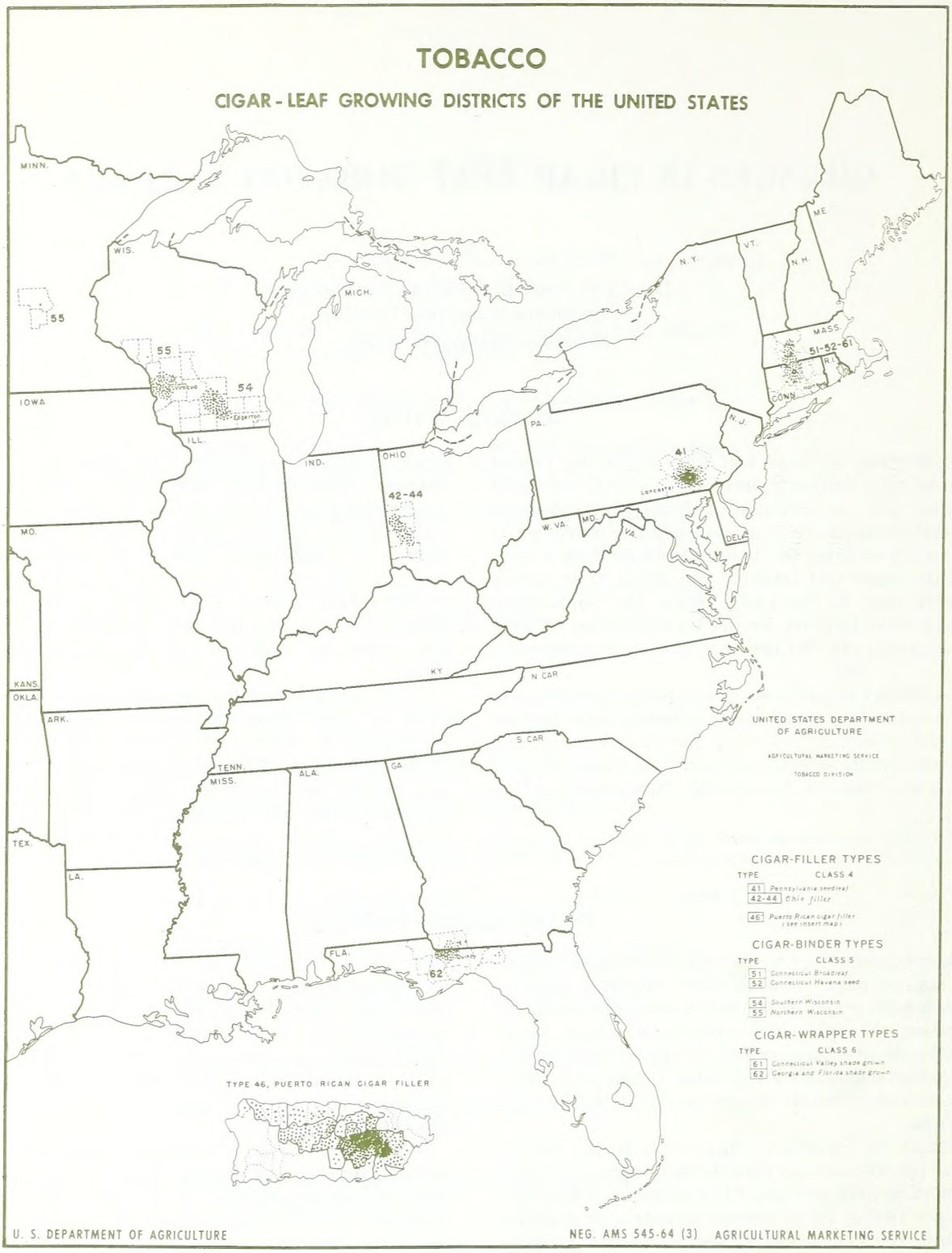

TOBACCO
CIGAR - LEAF GROWING DISTRICTS OF THE UNITED STATES
MINN.
WIS.
MICH.
N. Y.
VT.
ME
N.H.
MASS.
R.I.
CONN.
55
55
54
IOWA
ILL.
IND.
OHIO
PA.
N. J.
41
Lancaster
42-44
51-52-61
MO.
W. VA.
MD.
VA.
DELA.
KY.
N. CAR.
KANS.
OKLA.
ARK.
S. CAR.
TENN.
MISS.
ALA.
GA.
TEX.
LA.
FLA.
41
62
UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
TOBACCO DIVISION
CIGAR-FILLER TYPES
TYPE CLASS 4
41 Pennsylvania seedleaf
42-44 Ohio filler
46 Puerto Rican cigar filler (see insert map)
CIGAR-BINDER TYPES
TYPE CLASS 5
51 Connecticut Broadleaf
52 Connecticut Havana seed
54 Southern Wisconsin
55 Northern Wisconsin
CIGAR-WRAPPER TYPES
TYPE CLASS 6
61 Connecticut Valley shade grown
62 Georgia and Florida shade grown
TYPE 46, PUERTO RICAN CIGAR FILLER
U. S. DEPARTMENT OF AGRICULTURE
NEG. AMS 545-64 (3) AGRICULTURAL MARKETING SERVICE

Figure 1

underproduced their allotments (table 1). Due to less than normal supplies, USDA terminated quotas on cigar binder (types 51-52) in 1970. Growers of Pennsylvania filler (type 41) never approved quotas, so that type has never been under allotment. Quota legislation does not include cigar wrapper produced in Connecticut, Massachusetts, Georgia, and Florida (types 61-62). However, a marketing agreement which limits leaf harvest per plant has applied for many years in Georgia and Florida (type 62).

GENERAL ECONOMIC TRENDS

Conditions are unique in each tobacco-producing area, but some general trends prevail. For many years, farmers and farm workers have been attracted to nonfarm jobs by higher wages and more desirable working conditions. With the high labor requirements and the lack of mechanization, tobacco production has become a less attractive farm alternative (table 2).

During 1950-71, in the seven States producing cigar leaf tobacco, the increase in nonfarm employment ranged from 18 percent in Pennsylvania to 214 percent in Florida. Many farmers and farm workers, including young people, have left the farms for nonfarm jobs (table 3).

Farm employment also declined in six of the seven States during 1950-71. Declines ranged from one-third in Wisconsin to 70 percent in Massachusetts and Georgia. The number of farm workers in Florida increased 25 percent from 1950 to a peak in 1958 but declined 14 percent from 1958 to 1971.

Tobacco is a labor-intensive crop that requires 300 or more hours of labor per acre for filler and binder and about 1,300 hours for wrapper. Many producers hire labor, especially at harvest. In each of the seven States, farm wages more than doubled from 1950 to 1971. Increases ranged from 105 percent in Ohio to 210 percent in Georgia.

Nonfarm wages normally average more than farm wages (table 4). From 1950-71, the comparative advantage of nonfarm wages increased in Connecticut, Massachusetts, Pennsylvania, Ohio, Wisconsin, and Florida but declined in Georgia. In Connecticut and Massachusetts, 1950 wages in manufacturing plants were 59 percent higher than farm wages; in Georgia, 134 percent higher. By 1971, this percentage had increased to 80 percent in Connecticut and 73 percent in Massachusetts. In

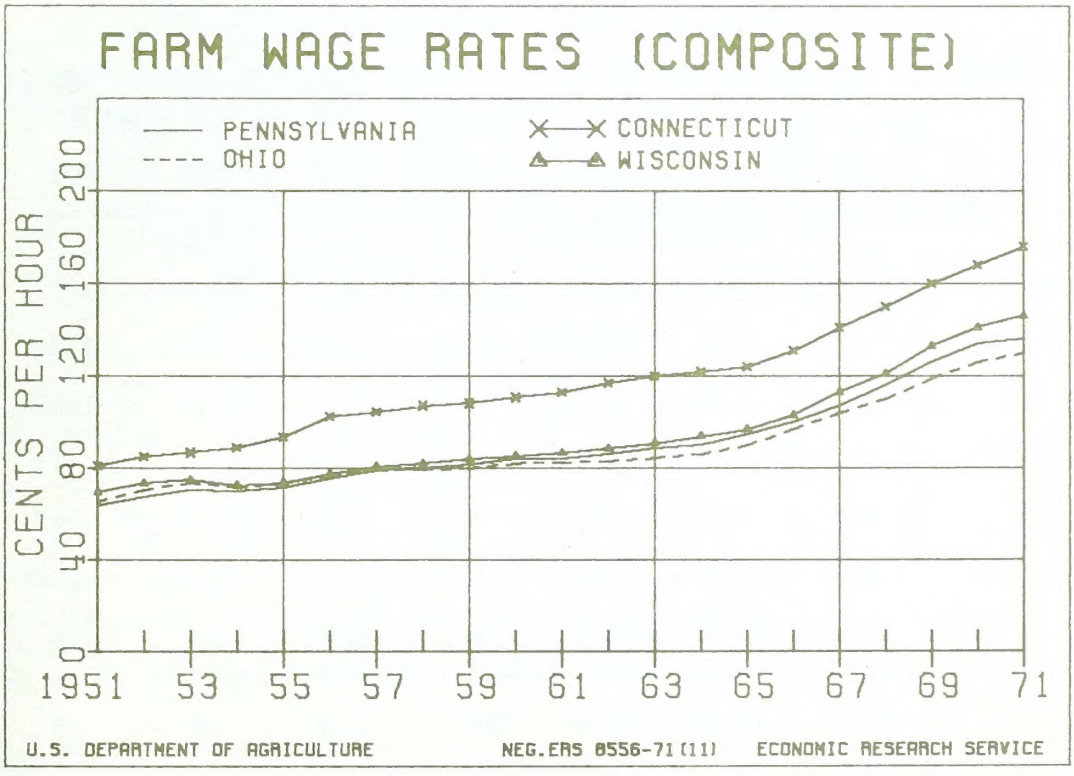


Figure 2

Table 1 --Harvested acreage of cigar tobacco (types 41-62) and percentage of allotted acreage, by State, 1951-71

State 2/	Harvested acreage					Percent of allotted acreage				
	1951 1/	1955	1960	1965	1971	1951	1955	1960	1965	1971
	Thousand acres					Percent				
Connecticut	16.9	14.7	8.7	8.7	4.70	88	70	32	50	24
Massachusetts	6.8	6.7	3.4	3.2	1.61	89	80	32	41	22
Pennsylvania	34.9	29.5	31.0	27.0	15.30	--	--	--	--	--
Ohio	4.9	4.4	4.3	3.7	2.05	69	69	79	79	49
Wisconsin	15.5	14.1	14.9	10.9	10.6	70	66	77	72	75
Georgia	1.1	1.0	1.3	1.5	.63	--	--	--	--	--
Florida	4.1	3.9	4.9	4.8	2.35	--	--	--	--	--
Total 3/	84.2	74.3	68.5	59.8	37.14	55	50	61	67	57

1/ Marketing quotas were not in effect before 1951. 2/ Quotas not in effect for wrapper tobacco and Pennsylvania filler. 3/ Percentages apply to tobacco under quota.

Table 2 --Cash receipts from cigar tobacco and share of cash receipts from marketings, by State, 1955-71 1/

State	Cigar tobacco cash receipts				Cigar tobacco as a percentage of all farm commodities			
	1955	1960	1965	1971	1955	1960	1965	1971
	- - - Million dollars - - -				- - - Percent - - -			
Connecticut	24.0	19.3	27.0	26.1	14.2	12.9	17.3	15.8
Massachusetts	8.2	6.5	10.1	11.0	4.9	3.6	6.3	6.7
Pennsylvania	13.2	16.8	12.4	9.9	1.8	2.2	1.5	.9
Ohio	1.1	1.9	1.4	1.6	.1	.2	.1	.1
Wisconsin	6.7	7.0	6.8	9.4	.7	.6	.6	.6
Georgia	2.5	3.9	4.5	2.6	.4	.5	.5	.2
Florida	9.5	14.4	14.1	9.8	1.4	1.9	1.4	.7
Total	65.2	69.8	76.3	70.4	1.7	1.6	1.5	1.0

1/ Calendar year.

Table 3 --Farm and nonfarm employment in selected States, 1950-71

State	Farm workers 1/					Nonagricultural employees				
	1950	1955	1960	1965	1971	1950	1955	1960	1965	1971
	Thousands									
Connecticut	34	32	25	20	13	766	875	915	1,033	1,166
Massachusetts	58	48	36	26	17	1,761	1,818	1,910	2,019	2,255
Pennsylvania	302	244	194	137	112	3,643	3,748	3,713	3,914	4,285
Ohio	320	289	242	184	147	2,760	3,129	3,147	3,364	3,828
Wisconsin	346	326	282	231	186	1,022	1,108	1,192	1,332	1,525
Georgia	320	234	183	139	98	807	960	1,051	1,257	1,575
Florida	107	119	121	121	112	704	966	1,321	1,619	2,209
Total	1,487	1,292	1,083	858	685	11,463	12,604	13,249	14,538	16,843

1/ Family and hired. Sources: (4, 5, 8).

Table 4 --Nonfarm-to-farm wage ratio and index of farm and nonfarm wages in selected States, 1950-71

State	Wage ratio 1/					Cigar tobacco price-farm wage ratio 2/				
	1950	1955	1960	1965	1971	1950	1955	1960	1965	1971
	Number									
Connecticut	1.59	1.68	1.77	1.87	1.80	3/.639	3/.432	3/.391	3/.370	3/.305
Massachusetts	1.59	1.68	1.71	1.71	1.73	4/2.843	4/1.714	4/1.714	4/2.016	4/2.020
Pennsylvania	1.96	2.04	2.16	2.25	2.14	.466	.343	.340	.254	.214
Ohio	2.17	2.11	2.41	2.28	2.45	.318	.296	.342	.291	.244
Wisconsin	1.84	1.95	2.24	2.13	2.09	.433	.327	.346	.303	.296
Georgia	2.34	2.39	2.51	2.03	1.99	5/5.319	5/4.075	5/3.738	5/3.462	5/1.888
Florida	1.91	1.97	2.29	2.18	2.15	5/4.282	5/3.179	5/2.924	5/2.785	5/1.818
	Farm wage index					Nonagricultural wage index				
	1950=100									
Connecticut	100	124	146	160	222	100	131	162	188	252
Massachusetts	100	129	140	164	228	100	124	151	178	248
Pennsylvania	100	126	147	162	230	100	131	162	186	251
Ohio	100	122	132	143	205	100	127	157	181	248
Wisconsin	100	122	136	155	231	100	131	161	187	253
Georgia	100	122	144	176	311	100	124	154	186	255
Florida	100	125	142	174	251	100	128	171	198	262

1/ Nonfarm manufacturing hourly wage rate divided by farm wage rate (without room and board). 2/ Average price of tobacco received by farmers (cents per pound) divided by farm wage rate (cents per hour). 3/ Cigar binder (types 51-52). 4/ Cigar wrapper (type 61). 5/ Cigar wrapper (type 62).

Computed from: (2, 3, 5, 6, 8).

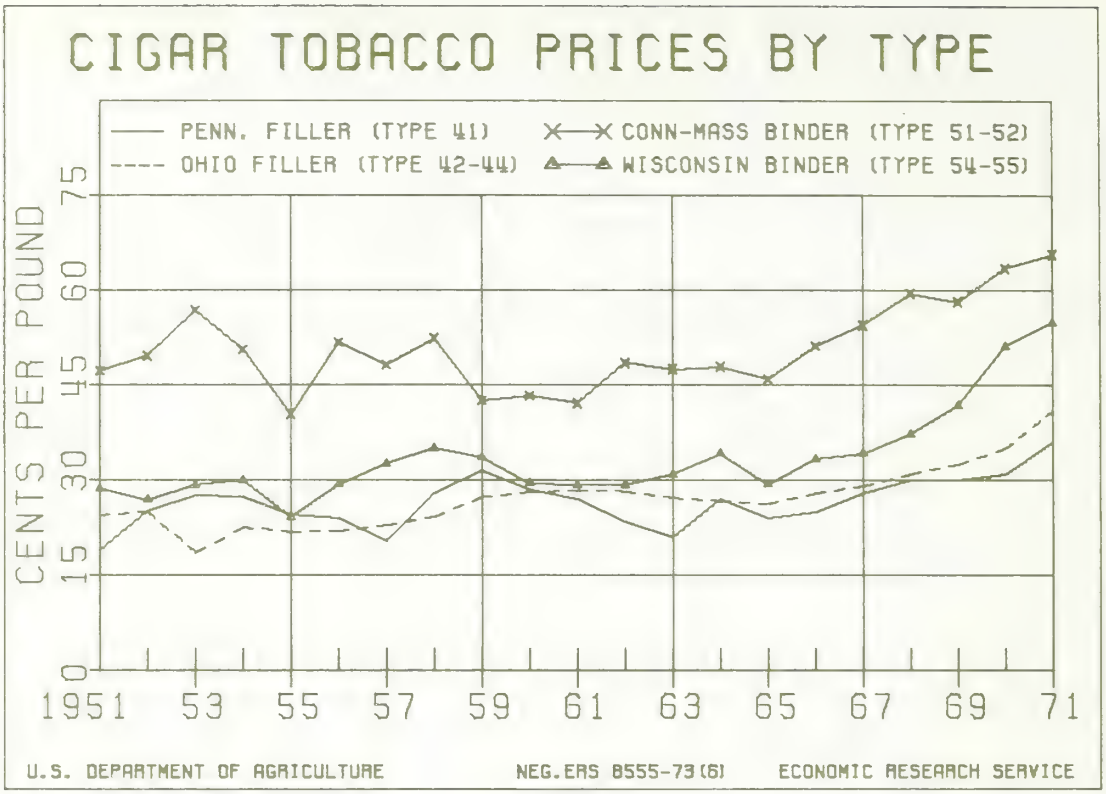


Figure 3

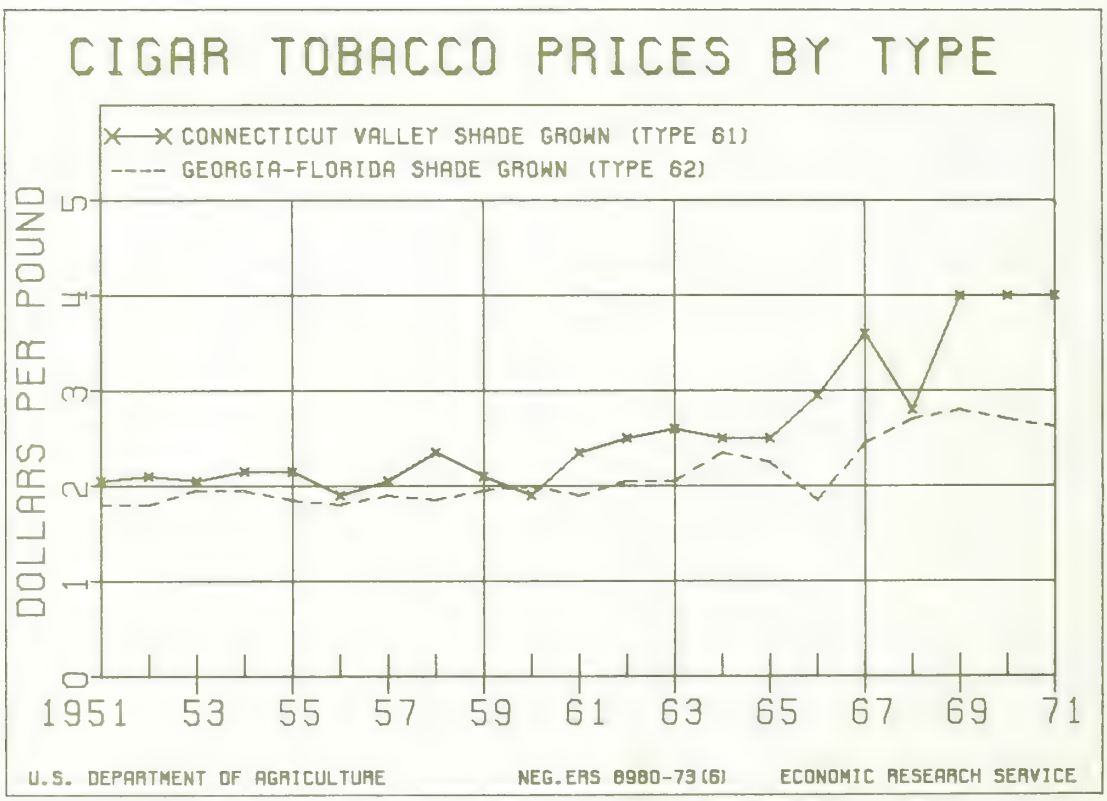


Figure 4

Georgia, the ratio declined, but farm wage rates averaged only half the nonfarm level.

In 1950, an hour's labor cost about 2¼ times the value of 1 pound of filler tobacco, 1¾ times that of binder, and about one-third that of Connecticut wrapper. By 1971, these figures had increased to about 6 for filler, 5 for binder, and .46 for Connecticut wrapper. Tobacco prices also increased over this period but did not keep pace with farm wages. Filler and binder prices were held down by large supplies and competition from imports. Cigar tobacco, which accounts for only a minor part of farm income, declined as a share of cash farm receipts in most States that produce cigar leaf (table 2).

ANALYSIS OF ACREAGE CHANGES

Ordinary least-squares regression techniques were used to relate harvested acreage of the three cigar tobacco types in 1957-71 to various explanatory factors. Either farm tobacco prices lagged 1 year or farm tobacco price-wage ratio and trend explained most of the year-to-year acreage changes. However, for some types, additional variables aided in statistically explaining the changes. Several additional factors such as number of farm workers, nonfarm employment and wage rates, ratio of farm to nonfarm wages, beef prices, and fertilizer prices were also examined. Many of these variables are believed to have a considerable effect on tobacco acreage changes although they were not detected to a significant degree in the statistical analyses.

Cigar Filler Acreage Changes

Cigar filler is a medium-to-heavy body tobacco used primarily for the core of the cigar. Flavor, aroma, and burning quality are its important factors. In addition to use in cigars, some is used in loose leaf chewing tobacco.

About 90 percent of the filler grown in the United States is produced in Pennsylvania (type 41) and the remainder in Ohio (types 42-44). Pennsylvania's production is concentrated in Lancaster county, and Ohio's in the Miami Valley. In both Pennsylvania and Ohio, cigar filler acreage has declined since the early 1950's.

During 1950-71, acreage of U.S. cigar filler declined from about 45,000 acres in 1950 to 17,000 in 1971. This decline averaged about 1,200 acres per year. Yield per acre increased during this period by about 15 pounds per year—less than 1 percent annually. Due to the acreage reduction, production declined from 66 million pounds in 1950 to 28 million in 1971.

To supplement U.S. grown filler, Puerto Rican filler is shipped to the United States in both leaf and product form. Only 5,000 acres of Puerto Rican filler were grown in 1971, compared with 17,000 acres in 1965 and 25,500 in 1950. Puerto Rican filler was not included in the regression analysis, although many of the same variables are believed to apply (*7*).

Among the variables used for estimating cigar filler acreage were farm prices of filler tobacco, farm wage rates, dairy product prices, harvested acreage, and time. Price variables were lagged 1 year, for when farmers make their planting decision early in the year, the previous season's relationships are the latest available. Dairying is a major farm enterprise in the filler tobacco area. While filler tobacco production has decreased, dairy production has increased since 1950. Results from several of the filler tobacco estimates for 1957-71 are contained in table 5.

In table 5, equation 1.1 (based on filler price, price-wage ratio, index of dairy product prices, previous year's harvested acreage, and time) gives a satisfactory fit—that is, coefficient signs are as expected, and two of the four t values are significant at or beyond the 5-percent level. Apparently, the time variable and the 1-year-lagged acreage are closely enough related to reduce the coefficients. The equation explains 98 percent of the year-to-year acreage variation (R^2=.98).

According to equation 1.1, a 1-percent increase in the price-wage ratio increased harvested acreage by about 50 acres. The equation states that filler tobacco acreage varies inversely with the index of dairy product prices (1967=100). If dairy prices increase one index point, tobacco acreage declines about 194 acres. Since farmer's resources and facilities for production are related to those available the previous year, acreage is positively related to the previous year's harvested acreage. In addition, a negative trend variable picks up some of the variation not explained by the other variables.

Cigar Binder Acreage Changes

Cigar binder tobacco (types 51-55) is used for binding the bunched filler into the form of the cigar. Natural binders must have good burning quality, aroma, and elasticity. Reconstituted sheet tobacco, a development of the 1950's, has rapidly replaced most natural leaf binders. As a result, loose leaf chewing tobacco is now the principal outlet for binder tobacco. Binder tobacco is grown mainly in Wisconsin but also in Connecticut and Massachusetts (*2*).

During 1950-71, cigar binder acreage declined by

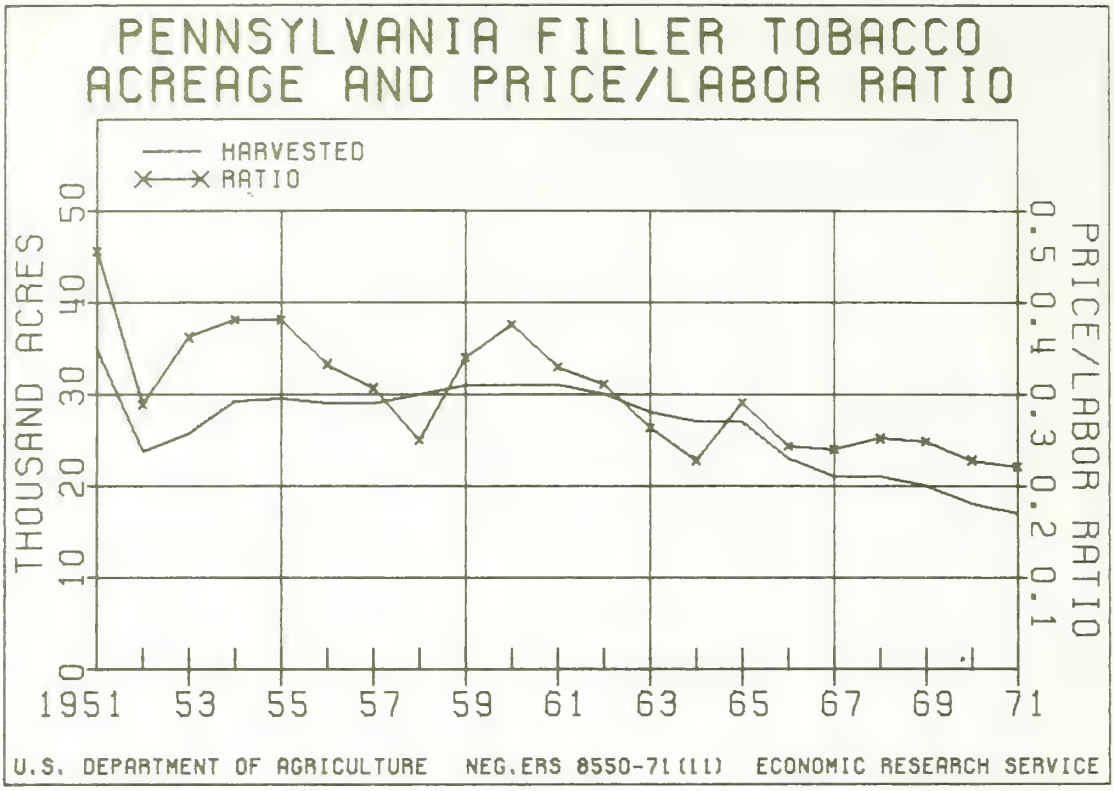


Figure 5

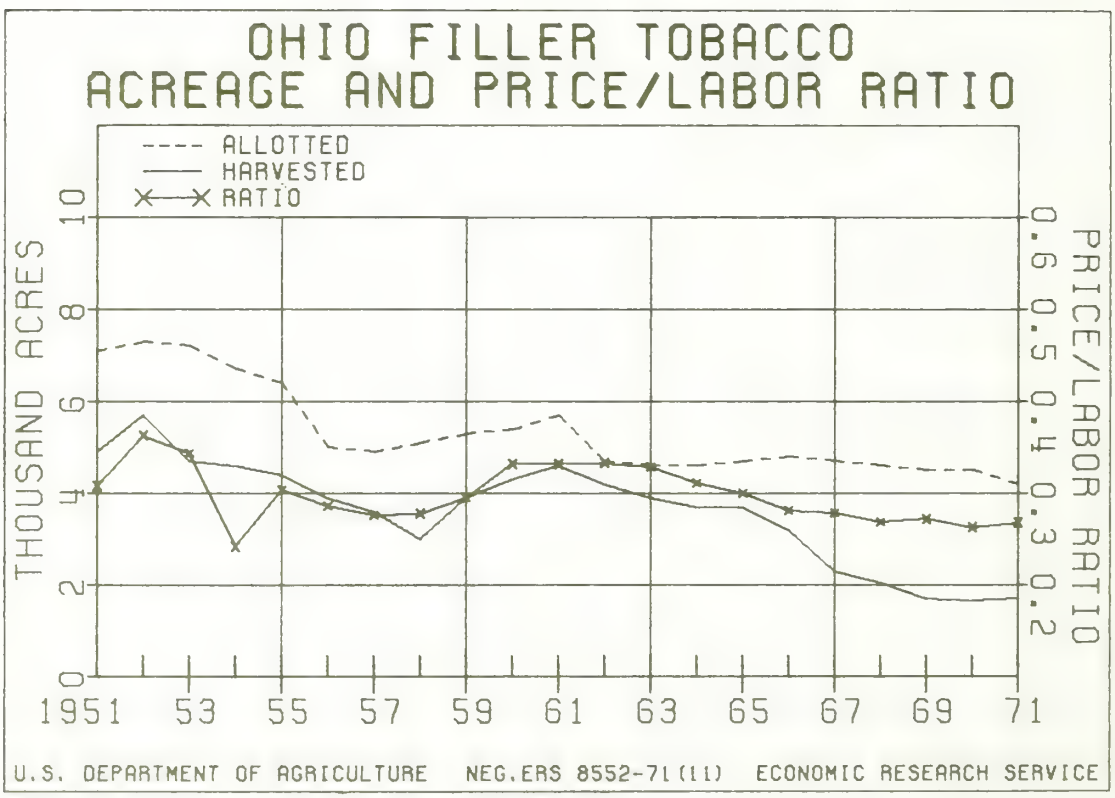


Figure 6

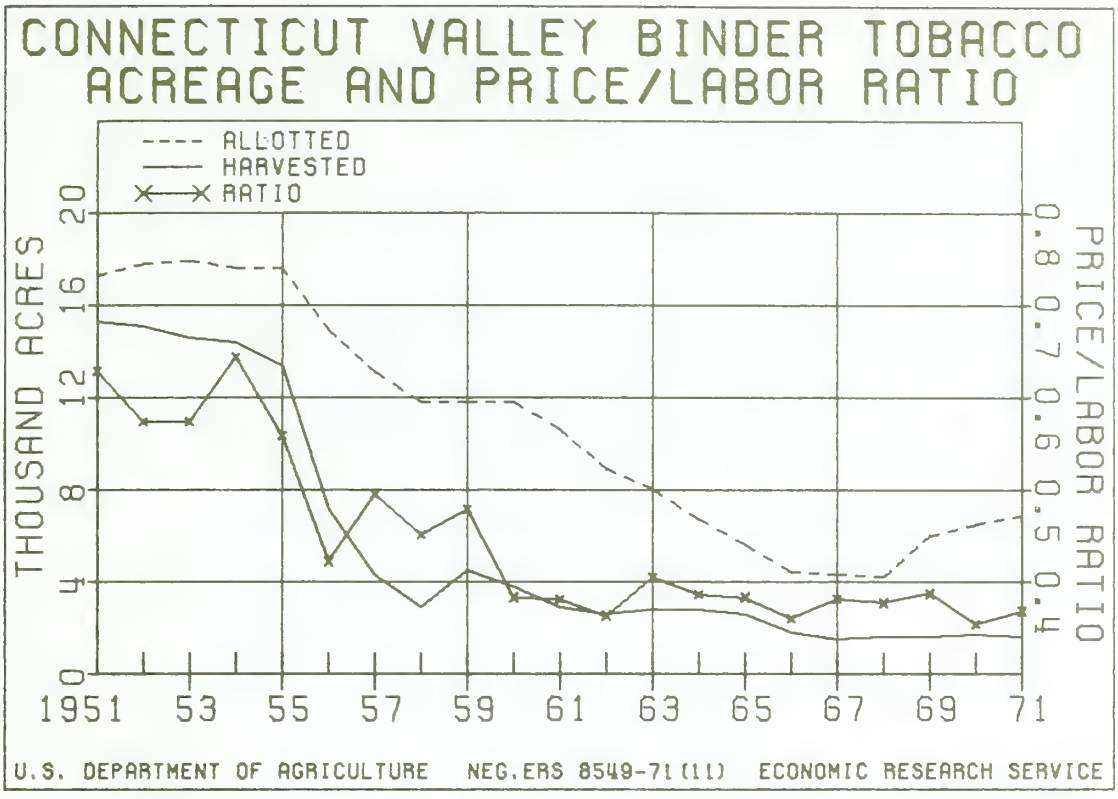


Figure 7

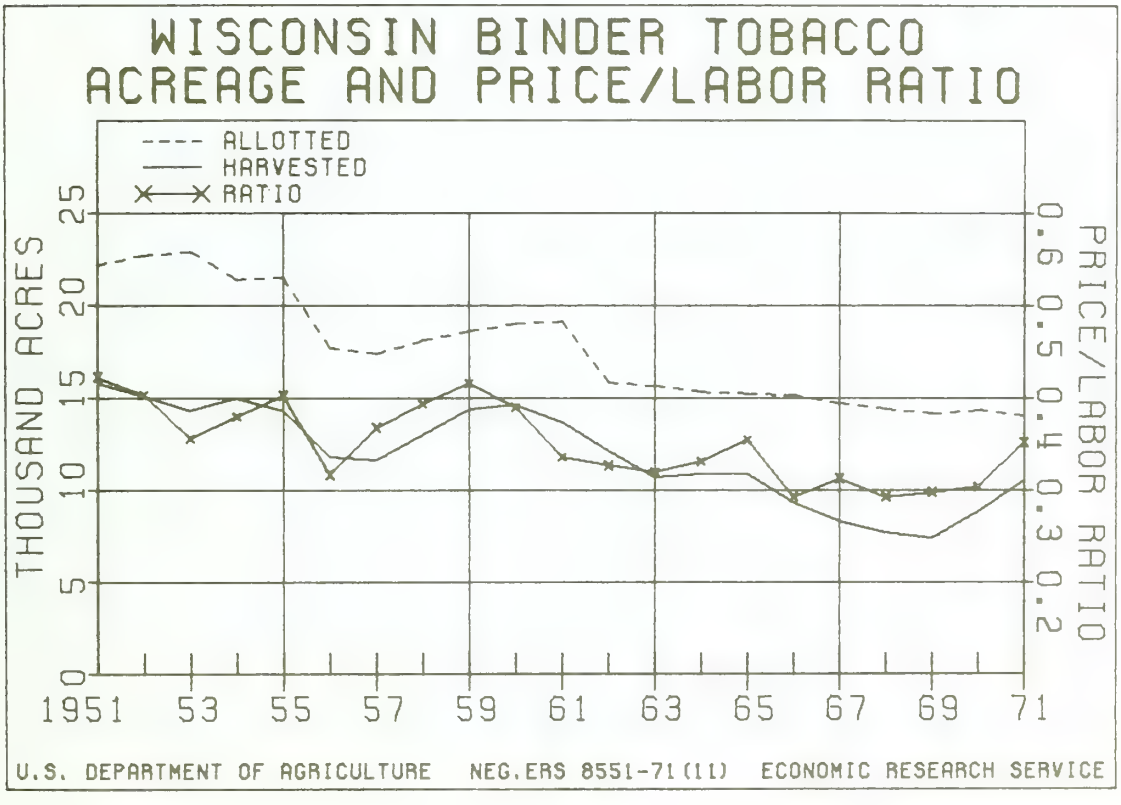


Figure 8

about 60 percent. The decline averaged about 1,300 acres per year. Also during this period, yields increased about 4 pounds per year, but production dropped about ½. Wisconsin growers produced about ½ of the U.S. binder acreage in 1950, but by 1971, they produced 88 percent. During this period, acreage declined by about 95 percent in Connecticut, 10 percent in Massachusetts, and 50 percent in Wisconsin.

Among the variables used in the estimating equations for cigar binder acreage were farm prices of binder tobacco, farm wage rates, acreage in diversion programs, time, and acreage reallocations (beginning in 1970). Results of some of the equations are summarized in table 5. Equation 2.3 (based on farm price of tobacco lagged 1 year, diverted acreage, time (1957=57), and reallocated acreage) gives a satisfactory fit—that is, coefficient signs are as expected, and two of the variables are significant at the 1-percent level and one at the 5-percent level. This equation explains 98 percent of the year-to-year acreage variations (R^2=.98).

Equation 2.3 indicates that a farm tobacco price increase of 1¢ per pound for binder tobacco brought an increase of about 175 acres harvested the following year. Introducing farm wage rates in the statistical equations did not improve the fit as it did for filler and wrapper.

The Soil Bank Program (1956-58) and the Cropland Adjustment Program (beginning in 1966) significantly reduced acreage. For each acre of binder tobacco allotment idled under these programs, the equation indicated .53 fewer acres were harvested. Since 1970, USDA has allowed transfers of filler and binder allotments from growers who do not wish to use their allotments to growers who want to increase their plantings. The equation indicates that for each acre of binder allotment transferred, harvested acreage increased 1.5 acres. Coefficients differ from unity because other variables such as price and trend affect program participation.

Cigar Wrapper Acreage Changes

Cigar wrapper is the most difficult and costly tobacco to grow. Since it is used primarily for the outside cigar covering, the leaves must be elastic, thin, free of injury, smooth, uniform in color, and have good burning qualities. To obtain these qualities, the wrapper tobacco is grown in fields

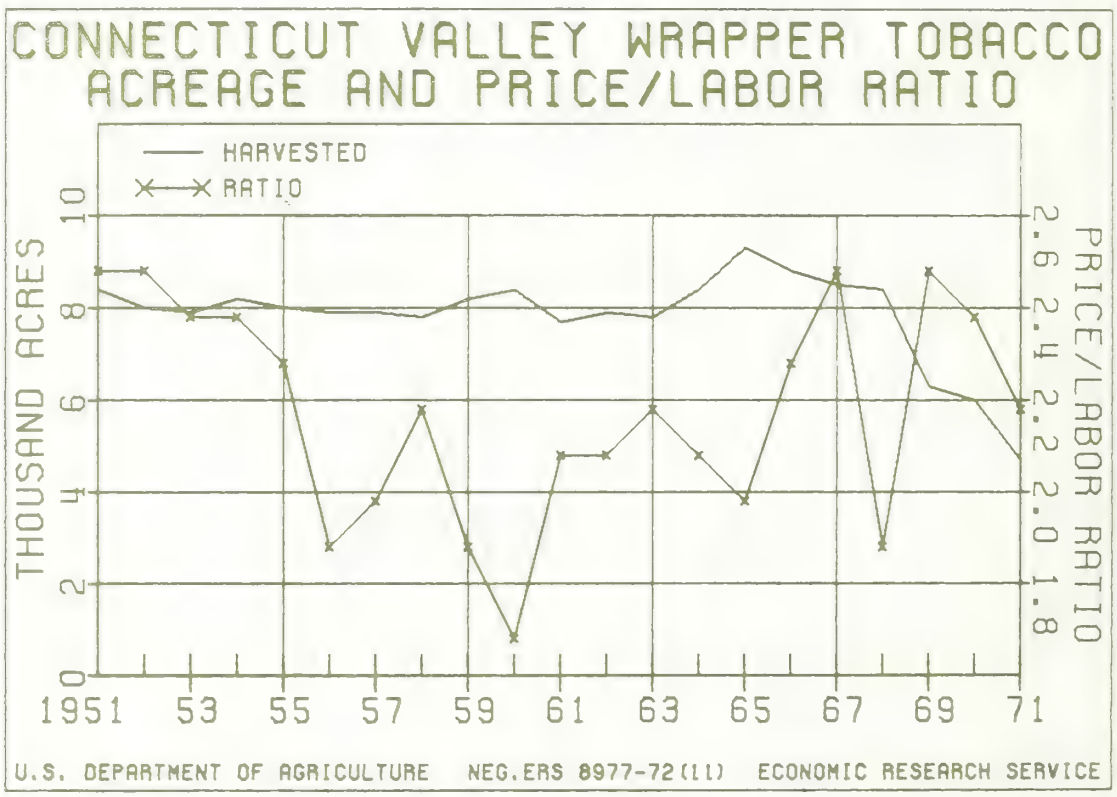


Figure 9

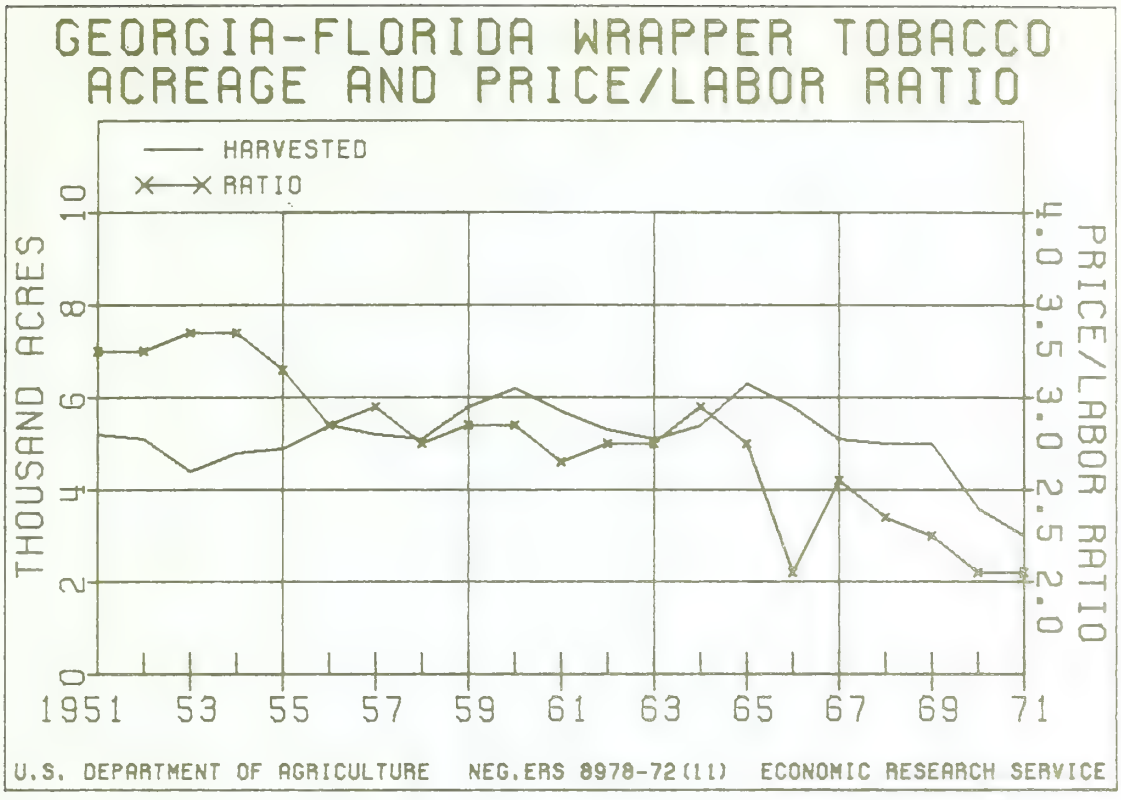


Figure 10

enclosed in cloth-covered frameworks. Also, the high quality standards require more labor.

Total production costs of cigar wrapper are about $4,500 per acre. With these high production costs, the selling price is eight times or more the price of filler or binder tobacco.

Virtually all wrapper is grown under sales contracts or on farms owned by cigar manufacturers. Most of the farms grow 60 to 100 acres of wrapper. Connecticut, Massachusetts, Georgia, and Florida are the wrapper-producing States.

Acreage of cigar wrapper tobacco declined 45 percent from 13,000 acres in 1950 to 8,000 acres in 1971. Most of the decline occurred from 1968 to 1971. Growers cited declining labor force and rising wage rates for the drop. Also, lower cost reconstituted sheet wrapper has reduced the demand for natural wrapper.

From 1950 to 1968, harvested acreage ranged between 12,300 acres in 1953 and 15,600 in 1965. Yields have changed relatively little since the early 1960's because of controlled production practices.

Several estimating equations for cigar wrapper tobacco acreage during 1957-71 are shown in table 5. Equation 3.1, based on farm price of wrapper tobacco, farm wage rates, and acreage harvested (all lagged 1 year), gives a satisfactory fit—that is, coefficient signs are as expected, and all variables are significant at the 1-percent level. This equation explains 91 percent of the year-to-year variations in acreage.

Equation 3.1 indicates that a 1¢ increase in farm prices for wrapper tobacco resulted in 40 more acres harvested. Also, when wage rates increased, production decreased sharply. According to the equation, a 10-percent increase in farm wages was associated with a decline in harvested acreage of 1,378 acres.

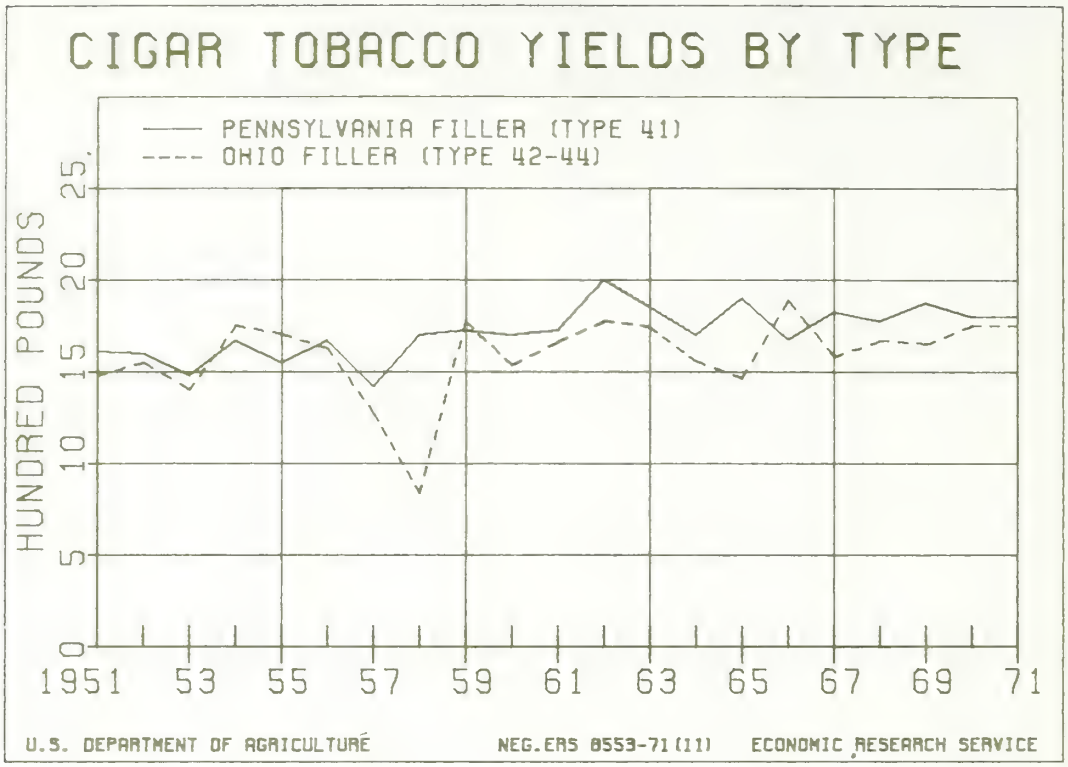


Figure 11

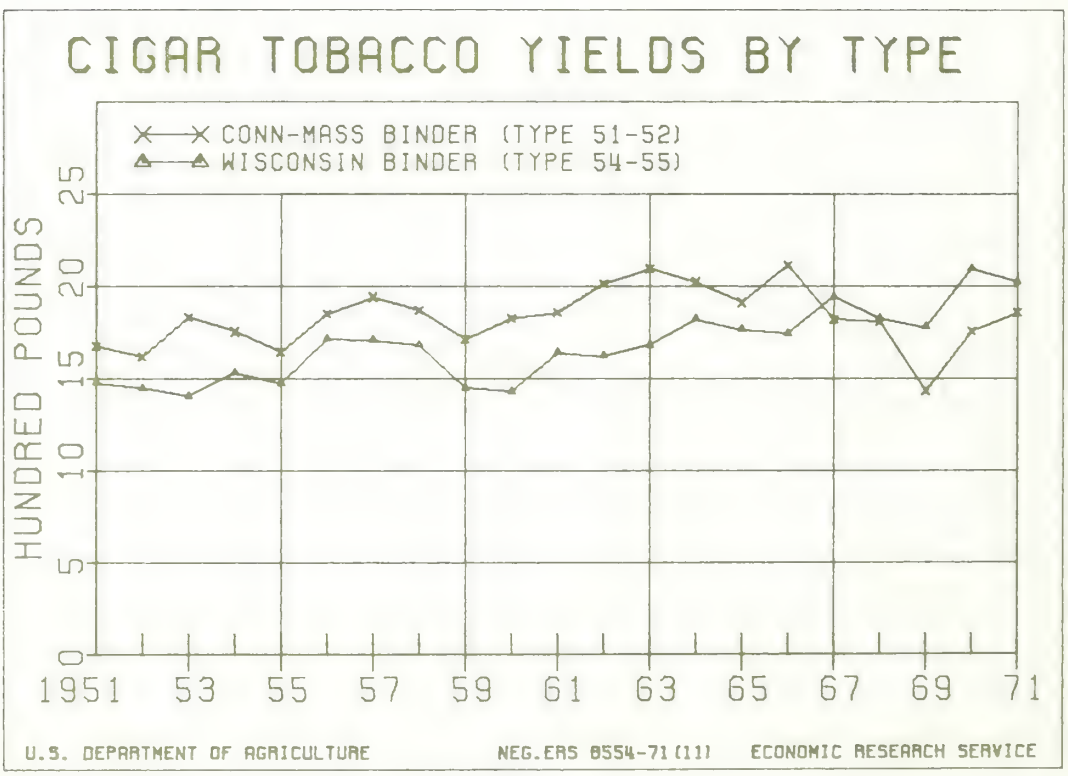


Figure 12

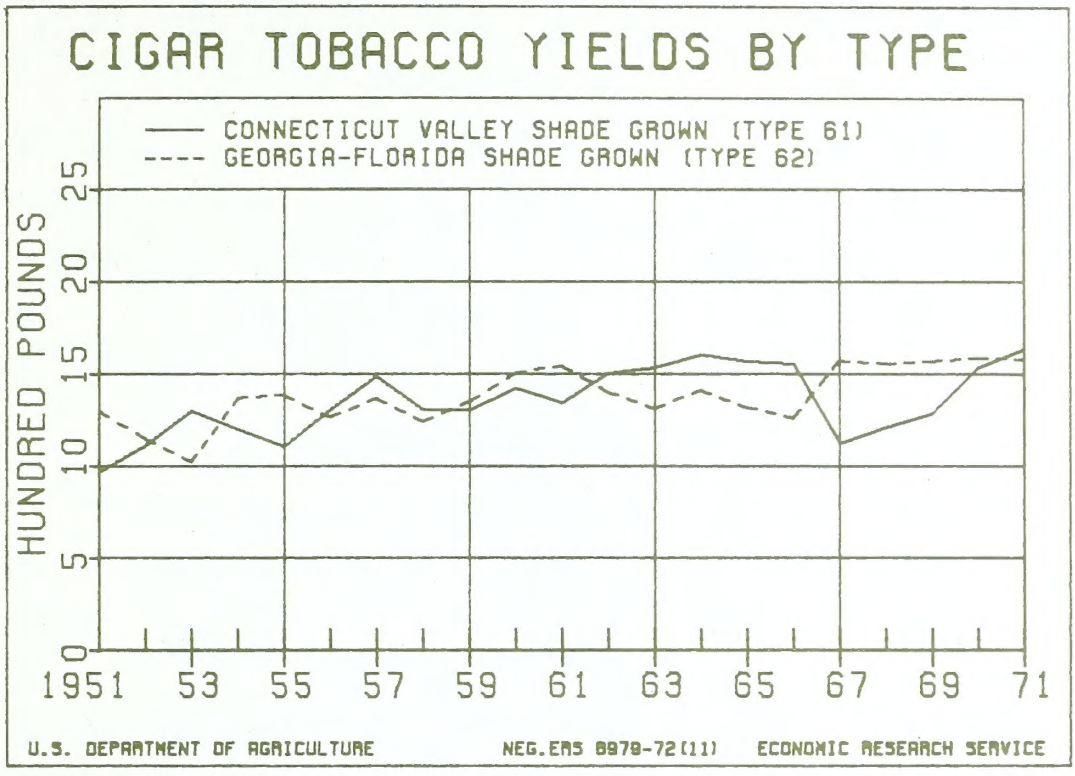


Figure 13

ACREAGE PROSPECTS

Over the next few years, the downtrend in cigar tobacco acreage is likely to continue. Farm prices are a major factor affecting acreage of cigar tobacco production, but leaf-economizing techniques of manufacturers and increasing competition from imports point to little increase in farm tobacco prices.

Consumers have switched from large to smaller, thinner, and filter-tipped cigars and cigarillos that require less tobacco leaf per unit of product. Reconstituted sheet tobacco, now substituted widely for natural binder and used increasingly for wrapper, offers substantial savings both in leaf use and labor cost. Therefore, manufacturers are likely to expand its use rather than pay higher prices to increase tobacco production. Use of sheet tobacco that offers both potential leaf and labor savings is attractive to manufacturers. Some cigar leaf goes into loose leaf chewing tobacco, but substantial increases in total cigar leaf use are unlikely.

Imports of cigar filler leaf and scrap have risen since the early 1960's to supply over half of the cigar leaf market. They will probably continue to increase and subject farm prices to pressure.

Since cigar tobacco production requires large amounts of labor, farm and nonfarm wage trends significantly affect acreage. Wages have doubled over the past two decades, and some upward trend will probably continue. Mechanized harvest of shade-grown tobacco seems improbable. Changes in filler and binder production probably depend on mechanization and other developments in burley tobacco—the chief air-cured type—and may be many years away. As more nonfarm jobs become available and workers' skills increase, many growers will continue to leave tobacco farms for other jobs. Nonfarm wage rates are higher. Also, nonfarm work is generally easier, steadier, and carries fringe benefits. Changes in tobacco allotment programs may increase acreage slightly in the short run, but as labor becomes more costly and scarce, the effect will probably be small over time.

Table 5 --Comparison of linear equation results for cigar tobacco acreage, 1957-71 1/

Equation	Intercept	Time 1957=57	Acreage harvested, t-1	Price rec'd, t-1 2/	Farm wage rate 3/	Price wage ratio, t-1 4/	Dairy prices index 5/	Prices Paid index 6/	Acreage shift: ASCS trans-fers 7/	Acreage shift: CAP 8/	Std. error	R^2 9/	D.W. 10/
						Cigar filler (Types 41-44)							
1.1	42.750	-.212 (1.61)	.357 (1.98)			25.091 (3.09)	-.194 (2.28)				0.954	.98	2.54
1.2	62.919	-.178 (1.21)				31.394 (3.73)	-.339 (6.89)				1.073	.97	2.50
1.3	29.847		1.130 (12.41)	17.035 (1.16)							1.595	.97	1.62
1.4	63.577	-.170 (1.13)				31.540 (3.65)	-3.532 (6.48)		1.423 (.67)			.98	2.67
1.5	-6.096		.925 (9.88)			25.920 (2.44)					1.374	.95	1.90
						Cigar binder (Types 51-56)							
2.1	51.043	-.488 (1.25)		4.915 (.22)	-8.867 (.74)				3.519 (1.83)		1.487	.85	.95
2.2	54.510	-.716 (6.00)				13.804 (1.54)			2.505 (4.06)	-.484 (6.69)	.656	.97	1.49
2.3	66.100	-.913 (20.21)		17.542 (2.56)					1.456 (1.90)	-.527 (7.91)	.567	.98	1.98
2.4	81.670	-.976 (1.88)		-7.190 (.34)	18.705 (.82)		-.231 (1.10)				1.534	.86	1.37
2.5	72.380	-1.046 (6.22)		-13.079 (1.48)	4.065 (.82)				1.309 (1.64)	-.548 (7.58)	.576	.98	1.88
						Shade-grown cigar wrapper (Types 61-62)							
3.1	0.804		.949 (5.72)	4.011 (3.16)	-13.789 (4.42)						.679	.91	2.22
3.2	4.289		.950 (5.48)	4.201 (2.90)	-12.797 (2.85)			-.049 (.32)			.709	.91	2.24
3.3	3.475		1.036 (5.47)	4.438 (2.69)	-13.158 (3.61						.765	.89	2.03
3.4	8.890		1.032 (5.47)	4.613 (2.63)	-11.401 (2.11)			-.081 (.45)			.794	.89	2.03
3.5	-18.436		6.095 (2.25)			1.386 (6.64)					1.013	.94	1.23

1/ In thousand acres. Values in parentheses below regression coefficients are their t values.

2/ Average tobacco price received by farmers, dollars per pound.

3/ Dollars per hour. Wisconsin data for cigar binder; South Atlantic data for equations 3.1 and 3.2; New England data for equations 3.3, 3.4, and 3.5

4/ Prices received, cents per pound divided by farm wage rate, and dollars per hour. Pennsylvania data for cigar filler; Wisconsin data for binder; New England wage rates for wrapper.

5/ Index of prices received by farmers for dairy products, United States, 1967=100.

6/ Index of prices paid, interest, taxes, and farm wage rates, 1967=100.

7/ Reallocated acreage, by the Agricultural Stabilization and Conservation Service, 1970-71.

8/ Diversion to Soil Bank, 1957, and Cropland Adjustment Program, 1966-71.

9/ Coefficient of determination.

10/ Durbin-Watson statistic.

LITERATURE CITED

(1) Akehurst, B. C.
1968. Tobacco. Humanities Press, Inc., New York, N.Y.

(2) Hendrickson, Clarence L.
1966. The Changed Market for U.S. Cigar Leaf Tobacco. U.S. Dept. of Agr., Econ. Res. Serv., ERS-292, July.

(3) U.S. Department of Agriculture.
1967-72. Crop Production, May issue and annual summary.

(4) _____
1963. Farm Employment—Family and Hired Workers, Annual Averages: States 1950-59; United States, 1910-59 U.S. Dept. of Agr., Statis. Bul. 334, Aug.

(5) _____
1960-72. Farm Labor, Jan. and Mar. issues.

(6) _____
1970. Tobacco (United States and State Estimates, 1866-1965; Type and Class Estimates, 1919-65). U.S. Dept. Agr., Statis. Bul. 454, June.

(7) _____
1970-72. Tobacco Situation, quarterly issues.

(8) U.S. Department of Labor.
1971. Employment and Earnings—States and Areas, 1939-71. Bureau of Labor Statistics, Bul. 1370-9.

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE
AGR 101
FIRST CLASS

U.S.MAIL